Laser Shower

Operating Manual

The Therapy Specialists
Centurion
Since 1979

CE
0366

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Section 1

Introduction

You have just purchased the most user friendly and up to date veterinary laser therapy technology available: the **Centurion Laser Shower**. Congratulations on your selection!

The Centurion Laser Shower operates by emitting laser light in a continuous shower at multiple frequencies. A 785 NM wavelength has been incorporated into the Laser Shower in response to research showing the most effective penetration of laser light. The effective average power directed toward an injured area is increased through multiple frequency targeting and the use of aluminum Galion Arsonite continuous wave laser diodes. The shower effect allows for the treatment of many diverse indications, ranging from surface injuries to deep-seated soft tissue injuries. Correct frequency selection, as is required by older style units, is not required in the operation of the Centurion Laser Shower.

Effects of Laser Light on Tissue

Understanding the five primary actions of laser light on tissue is helpful for proper use of the Centurion Laser Shower.

1. Accelerated Tissue Repair

The action of laser light is quite similar to photosynthesis, where plants manufacture food from carbon dioxide and water, using light energy to achieve chemical energy. Photons of light from a laser penetrate deeply into tissue and power the synthesis of adenosine triphosphate (ATP). In other words, photons of light energy are converted to chemical energy at the cell membrane. ATP acts as a major carrier of energy from one reaction site to another in all living cells. Increases in ATP resulting from laser light stimulation increases the energy available to the cell so that the cell can metabolize more quickly.

Nutrients can be taken in and waste products eliminated at a higher rate. The result is an acceleration of repair to the cells comprising tendons, and ligaments (connective tissue) with exposure to laser light.

2. Rapid Formation of Collagen

Approximately 80% of a horse's body is comprised of collagen. This essential fibrous protein is required to replace old tissue or repair tissue injuries. The most common example of collagen is

the clear sticky substance found around open wounds. The fibroblast cells found in connective tissue consume "extra" energy provided by laser light to increase collagen production. Wounds are repaired or closed over rapidly, and less scar tissue is formed, with the correct application of laser light.

3. Beneficial Effect On Nerve Cells and the Production of B-Endorphins

Laser light increases the activity of the ATP dependent NA-K pump thereby increasing the difference between resting potential and firing threshold across the cellular membrane. This action decreases nerve-ending sensitivity, encouraging the "blocking" of pain sensation transmission to the brain. Additionally, painkilling chemicals naturally produced by the body, such as endorphins and enkphelins, respond positively to laser light exposure.

4. Formation of New Capillaries and Increased Blood Flow

Laser light increases blood flow in the treatment area and will significantly increase the formation of new capillaries in damaged tissue. The formation of new capillaries speeds up the healing process, closing wounds quickly and reducing scar tissue.

5. Lymphatic System Activity and Reduction in Edema

While increasing blood flow will help to remove water from swollen tissue, the "dirty" protein waste requires additional support to drain from the damaged site. Laser light is capable of doubling the size of the lymphatic ducts in the area of exposure and rapidly removing the protein waste contributing to swelling. Laser light is further capable of reducing duct leakage in the lymphatic system, thereby decreasing the likelihood of the same problem reoccurring in the same area.

Section 2

Equipment and Basic Safety

Centurion Laser Shower Equipment

Your Centurion Laser Shower system consists of:

1 - Carrying Bag
1 - Logic Generator Unit
1 - Ultra Wide Head
1 - Superfine Head or Superfine Head with Acupuncture Point Finder*
1 - Recharging Unit
1 - User Manual
1 - Pair of Safety Glasses

General Safety Notes

While operating the laser applicators, care should be taken not to directly expose your eyes or the eyes of the animal under treatment to the laser radiation. The sole source of laser radiation comes from the aperture at the treatment point of the applicators and should always be pointed away from the eyes at all times. To avoid stray exposure, ensure that the laser is off when treatment ends by visually confirming that the emission indicator lamps located by the ON/OFF switch are off before you lift the applicator away from the treatment area.

Avoid the use of the laser system in the presence of mirrors or other highly reflective surfaces that are within 1 meter of the laser aperture.

Do not expose the laser system to direct solar radiation.

This product is not suitable for use in potential explosive areas.

The laser will not be effective when used over areas that have recently been treated with photosensitive chemicals such as cortisone, furacin or iodine. Scrubbing the treated area over a period of 5 - 10 days should allow full laser penetration.

*The Acupuncture Point Finder is an optional purchase. This applicator may be purchased to compliment your system and is discussed in this manual.

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WARNING - Avoid direct exposure of the beams to the eyes. Ensure that the operator is wearing the safety glasses supplied with the system prior to energizing the system. Failure to avoid direct exposure of the beam to the eyes could result in serious, irreparable damage to the eyes, including permanent blindness.

Information & Warning Labels Found on Product

Laser Information

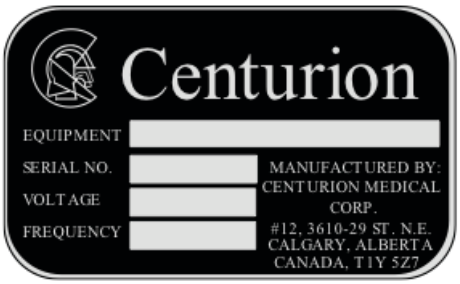
Visible Laser Radiation Warning Symbol

Usage Restriction

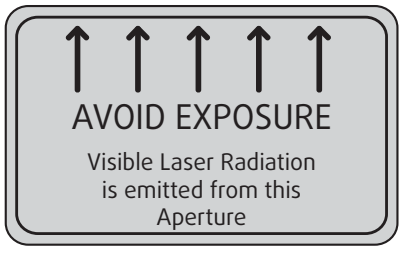
Visible Laser Radiation Warning Label

Sales & Service

Laser Radiation Danger



Serial Plate



Visible Laser Radiation Warning Label

Compliance Certification
This Laser Product Complies
with Federal Standards.
21 CFR 1040.10 and 1040.11
of the National Center for
Devices and Radiological
Health at the Date of Manufacture

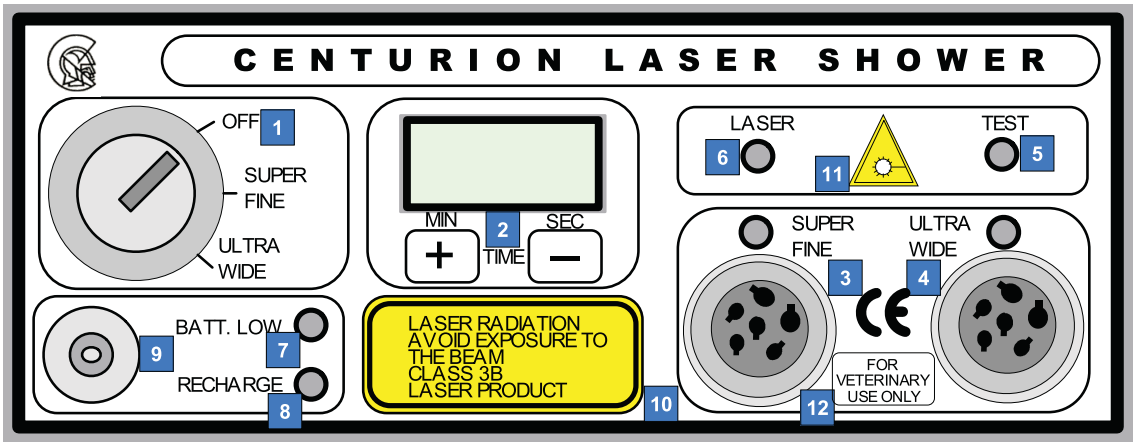
CDRH Laser Compliance

Section 3

Laser Shower Operation

Logic Generator Unit

Diagram #1: Logic Generator Front View



1. Treatment Selection Switch
2. Timer with Digital Display
3. Superfine Head Socket
4. Ultra Wide Head Socket
5. Test Area
6. Laser Test Indicator Lamp
7. Low Battery Indicator
8. Recharge Indicator
9. Insulated Charger Jack
10. Laser Information Label
11. Visible Laser Radiation Warning Symbol
12. Usage Restriction Label

Generator Operator Instructions

Reference Diagram #1

1. Place the long strap of the logic generator around your neck so that the unit hangs in front of you or place over your shoulder to maximize movement when treatments are in progress. For the protection of your eyes please ensure that you are wearing the supplied safety glasses.

2. Select the desired treatment applicator. Locate the appropriate socket for the treatment applicator [Superfine and Superfine with Acupuncture Point Finder must connect to the socket

marked Superfine (#3); Ultra Wide must connect to the socket marked Ultra Wide (#4)]. Lining up the pin arrangement between applicator head connector and socket, push the connector fully on to the socket. Turn the sleeve of the connector clockwise until it is firmly into place.

3. Turn the key on the Treatment Selection Switch (#1) to the position matching the chosen treatment applicator. The LED light will illuminate over the selected output socket. A 15 minute timing period will automatically be selected on the digital display screen (#2). You may choose more or less time (from 1 to 60 minutes) by pressing the "+" or "-" buttons below the display.

4. To start the treatment, proceed to the Operating Instructions for the chosen applicator. (Ultra Wide, Superfine, or Superfine with Acupuncture Point Finder).

NOTE: To operate effectively, the applicator should touch the skin unless treating an open wound or cut in which case the applicator should be held approximately 0.5 cm (1/4") away from the surface of the skin. When operating the Acupuncture Point Finder, the applicator should touch and maintain contact with the skin with slight pressure applied.

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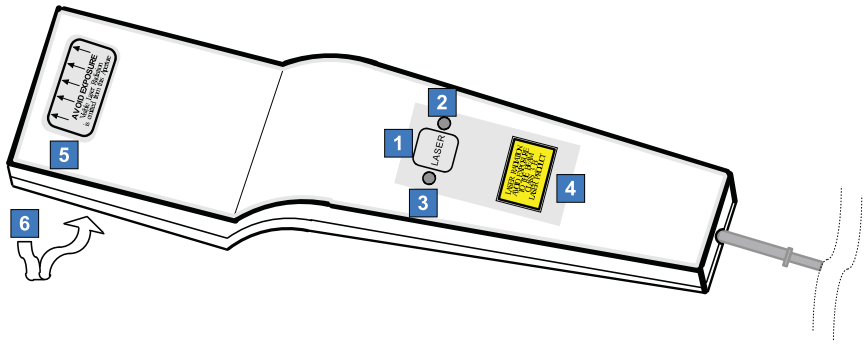
WARNING - Avoid direct exposure of the beam to the eyes. Ensure that the operator is wearing the safety glasses supplied with the system prior to energizing the system. Failure to avoid direct exposure of the beam to the eyes could result in serious, irreparable damage to the eyes, including permanent blindness.

Ultra Wide Treatment Applicator

Diagram #2: Ultra Wide Treatment Applicator

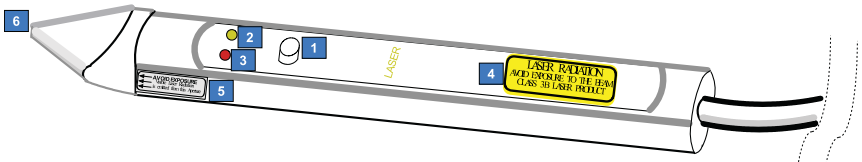


1. On/Off Switch
2. Emission Indicator
3. Service Indicator
4. Laser Information Label
5. Visible Laser Radiation Warning Label
6. Aperture

Please ensure that the laser aperture is pointed away from your eyes and the eyes of the animals under treatment. Referring to Diagram #2, press the ON/OFF button (#1). A yellow light will illuminate (#2) indicating that the laser is operating and the time on the Logic Generator digital display (see Diagram #1, Feature #2) will begin to count down. Pressing the ON/OFF button on the applicator will pause the treatment - the timer will stop counting but will retain the treatment time remaining. Pressing the ON/OFF button again will resume the treatment. When the treatment time is completed, the head will automatically shut off and the timer will reset to the default 15 minutes for the next treatment.

Superfine Treatment Applicator

Diagram #3: Superfine Treatment Applicator

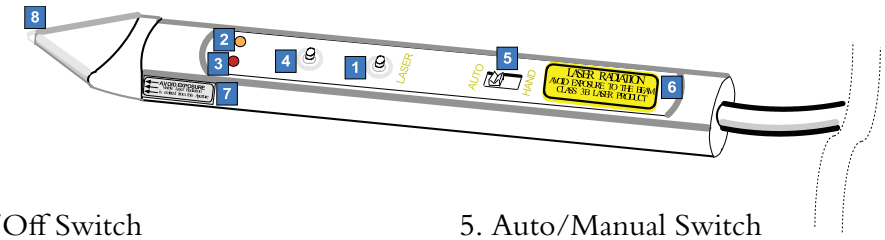


1. On/Off Switch
2. Emission Indicator
3. Service Indicator
4. Laser Information Label
5. Visible Laser Radiation Warning Label
6. Aperture

Please ensure the laser aperture is pointed away from your eyes and the eyes of the animals under treatment. Referring to Diagram #3, press the ON/OFF button (#1). A yellow light will illuminate (#2) indicating that the laser is operating and the time on the Logic Generator digital display (see Diagram #1, Feature #2) will begin to count down. Pressing the ON/OFF button on the applicator will pause the treatment - the timer will stop counting but will retain the treatment time remaining. Pressing the ON/OFF button again will resume the treatment. When the treatment time is completed, the head will automatically shut off and the timer will reset to the default 15 minutes for the next treatment.

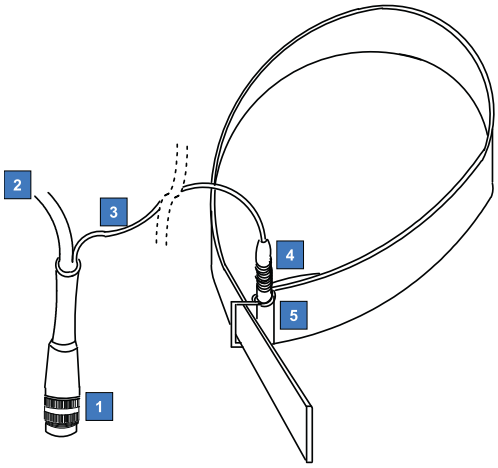
Superfine Treatment Applicator with Acupuncture Point Finder

Diagram #4: Superfine Treatment Applicator with Acupuncture Point Finder



1. On/Off Switch
2. Emission Indicator
3. Service Indicator
4. Conductance Setting Switch
5. Auto/Manual Switch
6. Laser Information Label
7. Visible Laser Radiation Warning Label
8. Aperture

Diagram #5: Dispersive Strap



1. Acupuncture Applicator Head Connector
2. To Applicator
3. To Dispersive Strap
4. Male Connector
5. Female Connector/Restraint Assembly

The Acupuncture Point Finder operates in manual mode the same as the Superfine head applicator (see previous section). In automatic mode, this unit will find acupuncture points and automatically turn itself on to deliver the treatment to the point. This section specifically discusses the use of the system in automatic mode. In either mode, **please ensure that the laser aperture is pointed away from your eyes and the eyes of the animal under treatment.**

Referring to Diagram #5, connect the Dispersive Strap to an area where it can contact skin such as around the base of your horse's tail and secured with leading edge through the Restraint Assembly (#5) as shown. Ensure that the Male Connector (#4) is completely secured in the Female Connector (#5). When working with the Acupuncture Point Finder, allow the applicator to touch and maintain contact with the skin with slight pressure applied.

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Point Location with the Point Finder

Acupuncture points are located with the point finder as zones having an increased skin conductivity (a reduced electric resistance of the skin) when compared to immediately adjacent areas of skin.

Procedure

1. Referring to Diagram #4, select "AUTO" with the Auto/Manual Switch (#5). A first reading is taken by placing the tip of the probe (Aperture #8) to an area of the skin away from known acupuncture points and depressing the Conductance Setting Switch (#4) for 3 seconds.

2. Move the point finder probe towards the area where the point is assumed to be. When you hit an area where there is less electrical resistance, the yellow light (#2) will illuminate and the probe will emit a buzzing sound indicating that treatment has begun. Take a second reading of the electronic response of the new skin area by depressing the Conductance Setting Switch for 3 seconds.

3. Move the point finder towards or within the region of the second reading. When the electrical skin resistance lowers again, you will get a signal. If the skin resistance does not fall again, you have found the center of the acupuncture point.

It is not always necessary to recalibrate the probe (by following the steps 1-3 as above) when moving from one treatment area to another.

Please Note:

A signal or switching-on of the laser will occur when the current conductivity value is higher than the stored value. This does not necessarily mean that you have found an acupuncture point. You may have to carry out several measurements before you find the point.

Extremely moist skin, or an extremely high atmospheric humidity, may lead to faulty results. Acupuncture points that lie very deep may be challenging to find. While the measurement is very accurate, if the acupuncture points are located relatively close together, the point finder indicator light may illuminate on the periphery of either point. A second conductance measurement may be necessary.

NOTE: The illumination of the red Indicator light (Feature #3 on Diagrams #2, 3 and 4 on any of the applicator heads indicates that not enough energy is getting from the battery to the diodes. In this case it should be gradually warmed up before attempted use. If the light does not dim after running the unit 2-3 minutes, it should be returned to the nearest service centre.

Section 4

Care & Maintenance

Testing for Output

For Safety reasons, you are cautioned not to test laser output by pointing the aperture at your eyes.

Superfine

When the Superfine applicator head is operational, the output of the laser head may be directed to the "TEST" (see Diagram #1; Feature #5) area of the control unit. If the laser applicator is emitting visible laser radiation, the Laser Test Indicator Lamp (#6) will illuminate.

Wide Angle

When using the Wide Angle Head, hold the applicator at arms length and at an angle away from direct viewing. The 7 diodes will be visible, indicating laser output.

Charging

The Centurion Laser Shower contains either Ni-Cad or Ni-MH rechargeable batteries. The system is fully charged when it leaves the factory and is received by you. Under normal conditions, you should be able to run the unit for 40 hours if only the Fine Point applicator is used and up to 10 hours if only the Wide Head Applicator is used. A combination use of both heads will typically give you about 25 to 30 hours of use between charging.

The unit should not be charged until the "BATT. LOW" light (Diagram #1; Feature #7) is illuminated. Frequent charging of the battery before full discharge may reduce the life of the battery pack or damage its ability to receive a full charge. The battery pack has been custom designed for this unit and, if these directions are followed, is capable of being charged up to 1,000 times during its life.

The following procedure should be used to charge the battery (referring to Diagram #1):

1. Charge only when "BATT. LOW" light (#7) illuminates on the generator faceplate.

2. Charge with the key removed from the unit. Do not use the unit while charging! Using the unit while charging does not allow the battery to charge. This may cause premature failure of the battery by causing the battery to discharge below a recoverable level.

3. Plug the charger unit into the Insulated Charger Jack (#9) on the generator faceplate and then plug the charger unit into the wall outlet. The "Recharge" light (#8) will illuminate to indicate the correct connection has been made.

4. Recharge for up to 10 hours. The "Recharge" light will turn off automatically to indicate that the battery is fully charged. Built in safety circuits preventing overcharging allow the charger to be left on overnight. Unplug the charger before using.

5. The battery may develop a "memory effect" from frequent charging prior to full discharge. You will notice a drop in the capacity of the battery power causing fewer hours available from recharge. In this case, cycle the battery through 3 full charge and discharge cycles (charge until the "Recharge" light turns off, and discharge through use until the "BATT. LOW" light illuminates X3). This will normally restore full storage capacity to the battery.

Care & Cleaning

Taking care of your Centurion Laser Shower system will help prolong its useful life. When not in use, store the unit in its supplied carrying bag. The carrying bag is divided into two sections: the control unit and charger should be stored in one section, and the treatment applicators should be stored in the other section to avoid damaging the treatment heads. Do not store with key inserted or applicators plugged into the unit. Do not leave the unit out where it can be exposed to excessive dust or moisture. Ensure that the storage area is between the temperature range of 0C (32F) and 45C (115F). Do not store the unit in any place where items may fall on it. When transporting, ensure that it is placed in a secure area, unlikely to move around, and away from your animals.

The generator may be cleaned with a damp cloth and a mild detergent as necessary. The applicators can be cleaned with isopropyl alcohol and cotton swabs and treatment heads should be cleaned after each treatment. When treating open wounds, hold the applicator approximately 1/4" (1 cm) away from the skin surface.

Disposal Considerations

Statutory regulations may apply to disposal of this product. Please contact your distributor or the manufacturer for disposal instructions.

Service Note

There is no user serviceable parts in the Centurion Laser Shower system. **Any attempt to open any of the parts contained in this system will void the warranties and could possibly result in hazardous radiation exposure.** If a problem is encountered, return the system to the nearest service centre for repair.

Section 5 Technical Data

Model	Centurion Laser Shower
Regulatory Compliance	ISO 13485:2003 93/42/EEC, Class IIb, NB #0366, CE Mark Health Canada Class II Medical Device License #14434 FDA-CDRH compliance 21CFR 1040.10 and 1040.11
Dimensions	Generator Only - 178mm x 171mm x 76mm - 7" x 6 3/4" x3" Carrying bag - 381mm x 229mm x 216mm - 15" x 9" x 8 1/2" Boxed - 460mm x 394mm x 320mm - 18" x 15 1/2" x 12 1/2"
Weight	System in Bag - 4.0Kg./9Ib. Boxed - 5.5Kg./12Ib.
Power Supply	9.6V Rechargeable battery pack with 15V/600 mA charger unit [Note: check local mains supply is equivalent to charge rated input requirement (120V or 230V)]
Pulse Duration	Swept frequency range 20 Hz. - 20,000 Hz.
Laser Classification	Class IIIB
Laser Diode Wavelength	785nm

Maximum Peak Radiant Power	Superfine Applicator - 9.6mW Ultra Wide Applicator - 25mW
Treatment Duration	Default setting = 15 minutes User selectable = 1-60 minutes
Optimum Operating Conditions	Indoors, room temperature (+10C to +30C), 30% - 75% relative humidity

Warranty: 1 year parts and labour for electronics systems (including the battery pack). Optional warranty extension available. The warranty is unconditional, and will cover any and all problems.

Contact Information

Sales and Service

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